

**REMARKS**

In response to the Office Action mailed June 23, 2008, claims 1 and 12 are amended, and claims 17 and 18 are cancelled. Support may be found, for example, in Fig. 10 of the present application. Claims 19-23 are added. No new matter has been added.

Applicants acknowledge the Examiner's withdrawal of claim 15 without prejudice. Applicants note with appreciation the withdrawal of the objection to the drawings, i.e. Fig. 10.

**Claims 1, 3, 4, 12, 14, 16 and 18 are rejected under 35 U.S.C. § 112, first paragraph**, as failing to comply with the written description requirement. Applicants respectfully traverse this rejection.

Regarding independent claims 1 and 12, the Office Action, at page 6, asserts that there is no general disclosure pertaining to the "entire" range of less than  $1.0 \text{ W/cm}^2$ . Specifically, the Office Action states that there is no disclosure using an electric power within the range of greater than  $0 \text{ W/cm}^2$  but less than  $0.28 \text{ W/cm}^2$ . Applicants respectfully submit that the amendments made to claims 1 and 12, which now recite an electric power of not less than  $0.28 \text{ W/cm}^2$ , overcome this rejection. Applicants also submit that the entire claimed range is clearly supported by, for example, Fig. 10. Thus, Applicants respectfully request that the Examiner withdraw the rejection of claims 1 and 12. Since claims 3, 4, 14 and 16 depend upon either claim 1 or claim 12, these claims are also allowable. Since claim 18 has been cancelled, the rejection of claim 18 is now moot.

**Claims 17 and 18 are rejected under 35 U.S.C. § 112, first paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter. Since claims 17 and 18 have been cancelled, the rejection of these claims is now moot.

**Claims 1, 3, 4, 12, and 14-18 are rejected under 35 U.S.C. § 103(a)** as being unpatentable over Shiomi, “High-Rate Reactive Ion Etching of Diamond and Fabrication of Porous Diamond for Field-Emission Cathode” (hereinafter “Shiomi”), in view of U.S. Patent 6,261,726 to Brooks et al. (hereinafter “Brooks”), and further in view of U.S. Patent 6,013,191 to Nasser-Faili et al. (hereinafter “Nasser-Faili”). Applicants traverse this rejection.

It is noted that since claims 17 and 18 have been cancelled, the rejection of these claims is now moot.

The Examiner asserts that with regard to the limitation of “the intensity ratio A/B of said mixture is greater than the intensity ratio A/B of the mixed gas with no nitrogen,” such condition of the intensity ratio is met when using N<sub>2</sub> between 2.5% and 40%.

Applicants respectfully submit that none of the prior reference teaches or even suggests the limitation of “the intensity ratio A/B of said mixture is greater than the intensity ratio A/B of the mixed gas with no nitrogen” as recited by claims 1 and 12. None of the cited references teaches or even suggests measuring the emission spectra of the plasma. None of the cited references teaches or even suggests measuring the specific emission peak, i.e. the peaks of atomic oxygen and molecular oxygen. None of the cited references teaches or even suggests monitoring the intensity ratio. And, none of the cited references teaches or even suggests maintaining the intensity ratio of the mixed gas with nitrogen greater than the intensity ratio of the mixed gas without nitrogen.

In this regard, the Examiner seems to assert that the prior references or their combination inherently disclose the use of the intensity ratio recited in claims 1 and 12 because there is no express disclosure of the use of the intensity ratio in the prior references. However, Applicants note that the fact that a certain result or characteristic may occur or be present in the prior art is

not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Further, Applicants submit that “[t]o establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference.’” “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). See, MPEP 2112. Applicants respectfully submit that the Examiner asserts a mere possibility but fails to show evidence that makes clear that the missing limitation is necessarily present in the things described in the reference.

Applicants further submit that, the claimed subject matter was made based on the Applicants’ findings that using the intensity ratio A/B obtained from the emission of an oxygen plasma without a nitrogen as a reference is specifically preferable to control the etching condition of a diamond substrate because the intensity ratio A/B varies in relation to the state of a plasma which is influenced by various factors such as power, pressure, substrate temperature, and apparatus form. Applicants further found that when the mixed gas contains nitrogen in an amount such that the intensity ratio A/B of said mixture is greater than the intensity ratio A/B of the mixed gas with no nitrogen, desirable etching results can be obtained (see, page 20, lines 14-21 and page 22, line 16 – page 23, line 9 of the present application).

In contrast to the present application, none of the cited prior references teaches or even suggests such findings or the use of the intensity ratio.

In order to establish *prima facie* obviousness under 35 U.S.C. § 103(a), all the claim limitations must be taught or suggested. At a minimum, the cited prior art does not disclose expressly or inherently the above recited limitations. Further, it is clear that it would not be

obvious to combine Shiomi, Brooks and Nasser-Faili to arrive at the subject matter of claims 1 and 12 because there is no motivation or suggestion to use intensity ratio A/B obtained from the emission of an oxygen plasma without nitrogen as a reference to control the etching condition of a diamond substrate. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 1 and 12. Since claims 3, 4, 13-14 and 16 depend upon either claim 1 or claim 12, it is respectfully submitted that these claims are also allowable. *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987) (A dependent claim is non-obvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims).

**Regarding New claims 19-23**, Applicants respectfully submit that these claims clearly define the claimed subject matter and are fully supported by the original application. Since these claims depend upon either claim 1 or claim 12, it is respectfully submitted that these claims are also allowable. *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987) (A dependent claim is non-obvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims).

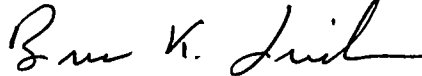
**CONCLUSION**

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call the undersigned attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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**Date: November 24, 2008**

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